

BACKGROUND OF THE INVENTION

Field of the invention

The invention relates to a package comprising a tray with various compartments in which different types of food are present, with one type of food being present in each compartment, which compartments are closed off by a film structure that is fastened to the tray around the openings of the compartments, with part of the film structure being present above each compartment of the tray, and at least a number of parts of the film structure are different from each other. The term film structure can be understood to mean either one single film or a combination of various films on and/or beside each other, as well as film with a substance or a sticker on it.

Such packages are usually intended to allow consumers to quickly and easily prepare their own meals. Many or all of the necessary ingredients are present so that the consumer himself need not buy all the ingredients separately.

Prior art

Such a package is known from the U.S. Patent No. 5,126,518. In this known package some parts are provided

with a layer of microwave-reflective material and other parts not to effect a decreased flow of microwave energy to the foodstuffs in certain zones of the tray and an enhanced flow of microwave energy to the foodstuffs in the remainder of the tray.

SUMMARY OF THE INVENTION

An objective of the invention is to provide a package of the type described in the preamble, in which individual circumstances can be created for the various types of food. for preservation of the food in the different compartments. To this end the package according to the invention is characterized by the fact that these parts are gas-permeable and/or that a material which reacts with gasses in the respective compartments is provided in and/or on the film structure. This creates circumstances for the food in the package that are adapted per type of food. For example the space in a compartment of the package can be fully sealed off from the outside environment by an gas-impermeable part of the film structure, or indeed interacting with the outside environment by way of a gas-permeable part of the film structure. For example in at least some of the parts of the film structure there can be perforations.

In addition, the various characteristics can be acquired because the film structure is comprised of various films, for example a first film and a second film or a sticker that is present on parts of the first film, or two or more films beside each other with different characteristics.

It is noted that from the U.S. Patent No. 4,935,252 that a food package is known having a film structure comprising two films of which one is applied on the other and can be removed. This package contains only one compartment. Furthermore the differentiation of the film structure only relates to characteristics for preparation of the food and not for preservation.

It is noted from European Patent No. 0,293,794 B1 that a working method is known in which various types of food are packaged in a single package. To improve the shelf life of the various types of food, in the known working method the various types of food are stored under different atmospheric conditions. Some types of food are preferably stored in an oxygen-low environment while others instead are better stored in an atmosphere that is rich in oxygen.

By utilizing a differentiated film structure according to the present invention in which the closure of each

compartment can be coordinated with the type of food present in the compartment and the condition of the food, an optimal environment can be created for the food. In this way even in a package where no separate gas atmospheres are present in the compartments good circumstances can nonetheless be obtained for the food.

For example the material can be an active substance which is placed in and/or on the parts of the film structure. The substance might be a material that reacts with the oxygen in the compartment and thus removes the oxygen from the compartment and the food. This is desirable for those types of food that can be stored best in a low-oxygen atmosphere, for example for the protection of flavor and aroma against oxidation. Such substances are generally known, for example films that contain iron powder. The iron powder rusts and oxygen is withdrawn from the food and the atmosphere in the compartment. Instead of iron powder ascorbic acid or sulphite can also be used as an active substance. These substances, too, oxidize and oxygen is withdrawn from the food and the atmosphere in the compartment. In addition, enzymatic-acting substances can be applied to the film, such as glucose oxidase or ethanol

oxidase in which enzymes are catalysts for an oxygen-consuming reaction.

The substance can also be a material, for example, that absorbs oxygen, for example a film of nylon polymer in which cobalt is present for a cobalt-catalyzed oxidation of the nylon polymer. Instead of, or in addition to, oxygen-absorbing substances, the film or sticker can also contain CO₂ absorbing or emitting substances, or ethylene absorbing substances, ethanol emitting substances, moisture-absorbing substances, etc. All of these substances are generally known.

The material can also be formed by applying a film structure that is activated upon radiation. By only radiating a number of the parts of the film structure, a film structure with varying characteristics is created. The material of the film structure should in this case be such that its characteristics can be changed by radiation or because certain substances in the material of the film structure can be activated by radiation. For example as a result of radiation the material can be activated such that for example it obtains the characteristic that it reacts to oxygen and thus removes the oxygen from the compartment. Such a film is known from the published European Patent

Application No. EP-A 0,520,257. This known film contains a combination of an oxidizable organic compound and a metallic transference catalyst. Here oxidation of the organic compound can be initiated by radiation. This known package consists of only one compartment. Furthermore in this known package the entire film is irradiated, there is no differentiation of the film. The manner of radiating is known from the published International Patent Application WO 99/21699. In this way food can be packaged both in a low-oxygen environment and a high-oxygen environment in a single package.

The invention also relates to a working method for separately packaging various types of food in a single package, comprising: placing food on a tray with different compartments open on one side, with one type of food being placed in each compartment, then placing a film structure above the open sides of the compartments, whereby above each compartment a part of the film structure is placed, at least the characteristics of some of the specified parts of the film structure are different from each other, followed by sealing fastening the film structure to the tray around the openings of the compartments.

As far as the working method package is concerned the invention is characterized in that the film structure is processed such that some of the parts of the film structure are gas permeable and/or are provided with a material in and/or on the film structure which material reacts with gasses in the respective compartments.

Processing the film structure can comprise for example placing perforations in at least a number of the parts of the film structure, for example to allow the food to breathe. The size of the perforations or the number of perforations can be adjusted depending on the degree of respiration of the food. A film with microperforations can also be used.

The composition of the film structure can for example take place by using first one film and then on parts of that film placing a second film or sticker. The second film or sticker can for example contain the above-mentioned active substance or consist of one of the above-mentioned materials that influence radiation. Or the first film can be perforated and the second film or sticker can be gas impermeable and seal off parts of the first film.

The film structure can also be composed for example by fastening two films to each other, after which one of the

films is locally removed. The one film can for example be perforated and the other film can be a gas-impermeable film that is placed in separate parts on the perforated film. Parts of the gas-impermeable film can for example be peeled off the perforated film.

Yet another method of composing the film structure can for example be to place two or more films with different characteristics beside each other on the tray. For example the various films can contain an active substance, be perforated, be made of a radiation-influencing material, or be gas impermeable. Possibly the films can first be connected with each other before being placed on the tray.

The composition and/or processing of the film structure preferably takes place before food is placed on the tray. This decreases the chance that waste materials that may occur during the processing end up in the food.

Another favorable embodiment of the working method according to the invention is characterized in that, before the film structure is composed and/or processed, first the characteristics of the food are determined, after which the composition and/or processing of the film structure takes place according to the characteristics of the food. Thus the conditions under which the food is stored can be better

coordinated with the actual condition of the food. For example, if the respiration of the food is high, it may be desirable that the space in the compartment be more connected with the environment, such that a film structure with high permeability is desirable.

For a full understanding of the present invention, reference should now be made to the following detailed description of the preferred embodiments of the invention as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows an embodiment of the package according to the invention in a top view.

Figure 2 shows the illustration in Figure 1 as a cross-section.

Figure 3 shows a diagram of a first embodiment of the working method according to the invention.

IN THE CLAIMS:

In line 1, change the title "Claims" and insert:

C L A I M S

What is claimed is: